THE UNITED STATES PATENT AND TRADEMARK OFFICE
(Docket No. 138065UL (MHM 15115US01))

In the Application of:

    Mathew

Serial No.:   10/681,634

Filed: October 8, 2003
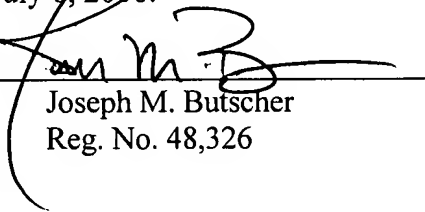
For: BIOMETRICALLY ENABLED IMAGING SYSTEM

Art Unit: 3737

Examiner: Ramirez, John Fernando

Confirmation No. 6101

CERTIFICATE OF MAILING

I hereby certify that on the date indicated below this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on July 6, 2006.

By: _____
Joseph M. Butscher
Reg. No. 48,326

DECLARATION UNDER 37 C.F.R. § 1.132 IN SUPPORT OF DECLARATION UNDER 37 C.F.R. § 1.131

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

I, Joseph M. Butscher, declare the following:

1.   I am an attorney of record for United States Application Serial No. 10/681,634 (the "application").

2.   I drafted and filed the application.

3.   A review of my records shows that an invention disclosure (attached as Exhibit A) related to the application was mailed to my firm on August 4, 2003.

4.   Once my firm received the invention disclosure, an associated file was created, docketed, and assigned to me.

5.   Prior to the filing date of United States Provisional Application No 60/501,097, from which United States Patent Application Publication 2005/0054926 ("Lincoln") claims priority, the inventor, Prakash Mathew, conceived of a "[m]ethod and system for biometric user authentication and personalization on an Ultrasound diagnostic imaging scanner," as shown in an excerpt from the invention disclosure attached as Exhibit A. *See* Exhibit A at page 1.

6.   The date deleted from Exhibit A is prior to the filing date of United States Provisional Application No. 60/501,097.

7.   Removing or blocking off the dates from an exhibit is an appropriate procedure under the Manual of Patent Examining Procedure at, for example, § 715.07.

8.   Prior to the filing date of United States Provisional Application No. 60/501,097, Mr. Mathew conceived of the invention described and claimed in at least claims 1, 10, and 19 of the present application, as evidenced by the invention disclosure attached as Exhibit A.

9.   For example, the invention disclosure describes an imaging system in which a biometric scanner is attached to an imaging scanner, so that a user can activate use of the imaging scanner through a biometric identifier:

> **A biometric scanner** device may be attached to every scanner as shown in Fig. 1 (below, next section). During the process of enrollment, each potential user is registered into the system in the presence of an administrator. The user presents his/her biometric profile (fingerprint sample, iris scan, voice sample etc.) and the system stores these samples or templates for future use. After the registration,

> the ultrasound scanner is always put into a default locked
> state, wherein no unauthorized person can use it. A pre-
> registered user, can walk up this locked scanner and simply
> press a fingerprint scanner or allow the system to scan the
> iris etc. The scanner will then compare the current sample
> against the valid ones stored in the system and thereby
> authenticate and identify the user. This automated, simple,
> electronic step, provides time savings and workflow
> productivity.

See id. at page 2.

10.   Additionally, the invention disclosure describes associating user
preferences with the stored biometric data of a particular user:

> **User preferences** can be modeled as being a set parameters
> that belong to a particular user or person, that also need to
> be portable electronically.   Using computers and
> information technology, a description or "user profile" of a
> user, containing particular setting information, can be
> stored electronically on the scanner whose back-end is
> almost always some kind of computing device (or off the
> shelf PC). A user sets his preferred preset values and stores
> the set as a unique named set. This is a one time operation
> that each potential user of a scanner will have to do. These
> preset collections can be stored either on the scanner itself
> or on a single central service computer (see Fig. 2 below,
> next section). In variations of this theme, multiple scanners
> might collaborate in a peer fashion and query each other for
> a users particular set of presets if they cant find it on the
> local machine. Using standard software IT methods, user
> presets and profiles could be updated, managed, maintained
> and distributed.

Id. at page 2.

11.   The invention disclosure further describes a system that combines
biometric authorization and stored user preferences:

> Further throughput optimization is realized when these two
> concepts are put together. A user could walk up to a locked
> scanner, and a biometric device on the scanner is used to
> interrogate who the user is. If it is a valid user, the scanner

is unlocked and ready to use, without the user having typed a single keystroke. Now as the system knows the identity of the user, the scanner selects the default presets for this particular user and automatically applies them. The Ultrasound scanner has thus achieved the tasks for authenticating, identifying and personalizing a scanner for a user, with one simple presentation action of the part of the user. It is also possible to combine biometrics with proximity scanner type cards (and/or smartcards with memory, CPU) for additional security or to download preference information that has not been entered into the system.

When the collection of user biometric samples AND user presets are stored in a central location or if the scanners all collaborate in a distributed peer method, then a user could walk up to an ultrasound scanner that he/she has never seen in his/her life and be able to authenticate and have defaults user presets applied to the machine in one single user action.

In all these cases, the workflow benefits and time savings is enabled by the integration of a biometric sensor device along with an ultrasound scanner.

Id. at page 2.

12.   On September 9, 2003, and September 10, 2003, my records indicate that I worked on drafting the application.

13.   Between August 4, 2003 (the date my firm received the invention disclosure) and September 9, 2003 (the date I began drafting the present application), my records indicate that I worked on numerous other matters, including applications and responses to office actions, which I received before August 4, 2003.
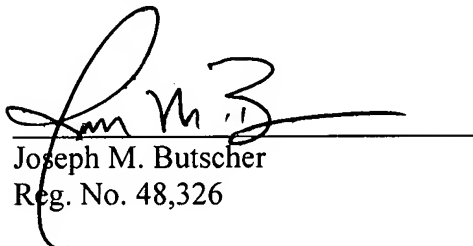
14.   On September 10, 2003, I sent a first draft of the application to the inventor, Mr. Mathew, for review. *See* Exhibit B.

15.   On September 23, 2003, I revised the draft application based on the inventor's comments and suggestions, and sent him a revised draft for review. *See* Exhibit C.

16.   The inventor executed the declaration and power of attorney (attached as Exhibit D) on October 3, 2003.

17.   After I received the executed declaration, I filed the application on October 8, 2003.

18.   I certify that all statements made herein of my own knowledge are true, and that all statements made herein on information and belief are believed to be true. I understand that willful false statements and the like are punishable by fine or imprisonment, or both (18 U.S.C. § 1001) and may jeopardize the validity of the application or any patent issuing thereon.

Joseph M. Butscher
Reg. No. 48,326

July 6, 2006
Date

γ GE Medical Systems *Invention Disclosure Form* 3000 North Grandview Blvd., W-710 P.O. Box 414, Waukesha WI 53188 (262) 544-3028; Dialcom: 8*320-3028	Docket No.:__138065_____ Mail to: PATENT OPERATION, W-710 Date Received:_▉▉▉▉▉_____

- Use as many pages in this word document as necessary.
- You may attach additional materials to support this disclosure, for example, Tech Notes and Drawings. Such submitted materials must be referenced in this disclosure form. Each page of these materials must be dated, signed and witnessed in the same manner as this invention disclosure.

MODALITY: *(e.g., CT, MR, Ultrasound, X-Ray)*

Ultrasound

INVENTION TITLE: *Provide a unique, descriptive title. If you write this disclosure in a language other than English, please provide a title in English as well. Si vous rédigez en français, merci de proposer un titre en anglais et un titre en français.*

Method and system for biometric user authentication and personalization on an Ultrasound diagnostic imaging scanner

PROBLEM/BACKGROUND: *Describe the problem that is solved by the invention. Assume that the reader has a basic knowledge of your diagnostic imaging modality and related technologies.*

The clinical ultrasound(U/S) machine is a very useful, mature and versatile method to perform diagnostic tissue imaging of patients. The ease of use, low cost, portability and lack of any ionizing radiation exposure enables this tool to be widespread in use. U/S exams are routinely used in thousands of cases worldwide and at may hospital departments, represents a significant portion of their acquisition modality. The operators(sonographers) are trained technicians whose skills are very important in achieving the right image view and quality. These sonographers/ technologists/radiologists currently spend a lot of time "tweaking" the U/S controls and presets to where they just like it. However, on many machines today, the presets belong to the machine which means that should a different sonographer use the same machine, then he/she has to reenter his preferred presets and the previous presets are lost.

Another aspect of the Ultrasound workflow is the need for speed as well as ease of use. The clinical scenario is often that of an ill patient lying on a table while being scanned. It is not very desirable(especially in case of trauma or emergency) for a sonographer to be able to log in to and tweak the controls from a patient discomfort point of view. Anything that can be done to minimize the time a new operator has to spend to ready an U/S machine for scanning use, will greatly improve the patient care quality as well as hospital throughput (and revenue).

Of late there is an increasing burden placed on healthcare providers for patient data privacy as well as security controls. The HIPAA and EC regulations recommend/require adequate network security controls on all items that convey patient information, in the healthcare enterprise. Scanners are not exempt and there is the need for the hospital to be able retrace and account for every use of the healthcare equipment. This log-in (authentication and access) controls are becoming increasingly burdensome on the operator, whose true expertise is in the U/S scanning technique, and lengthens the patient treatment time. Anything that can be done to minimize the effort needed while achieving a higher standard of security controls is desirable .

The problem therefore, can be summarized as the need for techniques that assure higher security controls on ultrasound equipment while simultaneously decreasing the time needed to prepare a machine for preferred skilful use, within the healthcare enterprise.

EXHIBIT A

BEST AVAILABLE COPY

INVENTION DESCRIPTION: *Describe how the invention works and how it solves the problem posed above.*

Based on the problem statement in the previous section, we propose a novel solution that is a combination of biometric scan techniques and user preference options.

Biometrics refers to the automatic identification of a person based on his/her physiological or behavioral characteristics. This method of identification is preferred over traditional methods involving passwords and PIN numbers for various reasons: (i) the person to be identified is required to be physically present at the point-of-identification; (ii) identification based on biometric techniques obviates the need to remember a password or carry a token. By replacing PINs, biometric techniques can potentially prevent unauthorized access to or fraudulent use of ATMs, cellular phones, smart cards, desktop PCs, workstations, and computer networks. PINs and passwords may be forgotten, and token based methods of identification like passports and driver's licenses may be forged, stolen, or lost. Thus biometric systems of identification are enjoying a renewed interest. Various types of biometric systems are being used for real-time identification, the most popular are based on face recognition and fingerprint matching. However, there are other biometric systems that utilize iris and retinal scan, speech, facial thermograms, and hand geometry.

A biometric system is essentially a pattern recognition system which makes a personal identification by determining the authenticity of a specific physiological or behavioral characteristic possessed by the user. An important issue in designing a practical system is to determine how an individual is identified. Depending on the context, a biometric system can be either a verification (authentication) system or an identification system.

A biometric scanner device may be attached to every scanner as shown in Fig 1 (below, next section). During the process of enrollment, each potential user is registered into the system in the presence of an administrator. The user presents his/her biometric profile(fingerprint sample, iris scan, voice sample etc.) and the system stores these samples or templates for future use. After the registration, the ultrasound scanner is always put into a default locked state, wherein no unauthorized person can use it. A pre-registered user, can walk up to this locked scanner and simply press a fingerprint scanner or allow the system to scan the iris etc. The scanner will then compare the current sample against the valid ones stored in the system and thereby authenticate and identify the user. This automated, simple, electronic step, provides time savings and workflow productivity.

User preferences can be modeled as being a set parameters that belong to a particular user or person, that also need to be portable electronically. Using computers and information technology, a description or "user profile" of a user, containing particular setting information, can be stored electronically on the scanner whose back-end is almost always some kind of computing device(or off the shelf PC). A user sets his preferred preset values and stores the set as a unique named set. This is a one time operation that each potential user of a scanner will have to do. These preset collections can be stored either on the scanner itself or on a single central service computer (see Fig 2 below, next section). In variations of this theme, multiple scanners might collaborate in a peer fashion and query each other for a users particular set of presets if they cant find it on the local machine. Using standard software IT methods, user presets and profiles could be updated, managed, maintained and distributed.

Further throughput optimization is realized when these two concepts are put together. A user could walk up to a locked scanner, and a biometric device on the scanner is used to interrogate who the user is. If it is a valid user, the scanner is unlocked and ready for use, without the user having typed a single keystroke. Now as the system knows the identity of the user, the scanner selects the default presets for this particular user and automatically applies them. The Ultrasound scanner has thus achieved the tasks or authenticating, identifying and personalizing a scanner for a user, with one simple presentation action on the part of the user. It is also possible to combine biometrics with proximity scanner type cards (and/or smartcards with memory,CPU) for additional security or to download preference information that has not been entered into the system.

When the collection of user biometric samples AND user presets are stored in a central location or if the scanners all collaborate in a distributed peer method, then a user could walk up to an ultrasound scanner that he/she has never seen in his/her life and be able to authenticate and have default user presets applied to the machine in one single user action.

In all these cases, the workflow benefit and time savings is enabled by the integration of a biometric sensor device along with an ultrasound scanner.

Biometric scanner;
Fingerprint scanner
shown; could be voice,
iris, handprint, facial
recognition etc.

Biometric recognition
software, samples
User prefrerence data

+

FIG 1

Centralized biometric
And user profile information

If absent, then scanners might
Communicate in peer mode
Thereby distributing
The user profile and biometric
data

FIG 2

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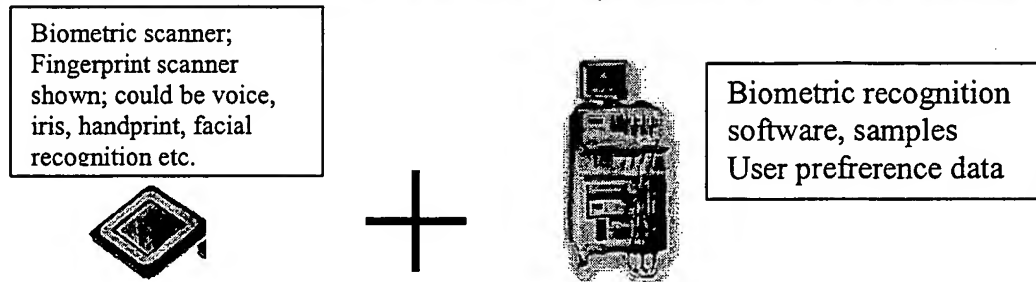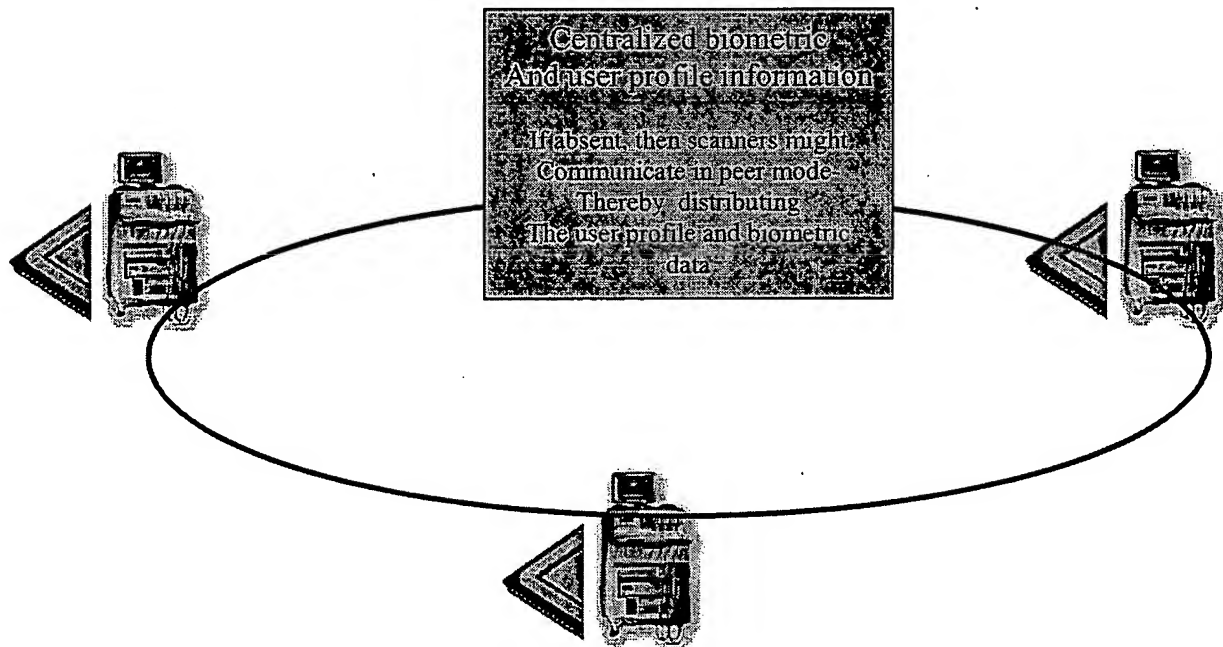
McANDREWS, HELD &

MALLOY, LTD.

34th Floor
500 West Madison Street
Chicago, Illinois 60661
Telephone: (312) 775-8000
Facsimile: (312) 775-8100

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jbutscher@mhmlaw.com

September 10, 2003

VIA ELECTRONIC MAIL

Prakash Matthew
Prakash.Matthew@med.ge.com

Your File No. 138065UL
Our File No. 15115US01

Re: New Utility Patent Application
        Title: "Biometrically Enabled System"
        Due Date: September 24, 2003

Dear Prakash:

At the instruction of our client, G.E. Medical Systems, we have prepared the enclosed draft patent application, including claims, abstract, specification, and drawings. Please review these materials carefully, both to supplement areas where more description is needed and to correct any errors. Please distribute copies of the enclosed materials to any co-inventors who should be named in the application and ask that they review the material in the same manner as outlined above. Then return a copy of the application containing your comments, so that we may make the necessary changes. Once we have made any necessary corrections and additions to the application, we will send you the application in final form with the necessary paperwork for execution and filing. Please contact me with any comments or changes by September 24, 2003.

As we understand it, all of the rights to the invention described in this patent application shall be assigned (i.e. ownership of all rights in the invention will be transferred) to GE Medical Systems Global Technology Company, LLC, a Delaware limited liability company, with offices at 3000 North Grandview Boulevard, Waukesha, WI 53188.

If you plan to disclose the invention for the first time soon, please advise us of your plans well in advance. If possible, we will complete and file this application before the invention is first disclosed, to preserve your right to file foreign counterpart applications in the future.

EXHIBIT B

Finally, a duty of disclosure rests upon each inventor, each attorney, and every other individual who is substantively involved in the preparation and prosecution of a patent application. Each of these individuals has a duty to disclose all material information of which he or she is aware to the Patent and Trademark Office in a timely manner, failing which any resulting patent might be found invalid.

Generally speaking, "material information" is any information which establishes, alone or in combination with other information, a "prima facie" case that the claimed invention is not patentable, or which refutes or is inconsistent with an argument the applicant makes to the PTO respecting patentability. Such "material information" may include:

1)   disclosures in prior U. S. or foreign patents, patent applications, or publications;
2)   information known or used by others in this country;
3)   the details of articles or processes which have been publicly or commercially used, offered for sale or sold in this country by you or others; and
4)   the prior inventions of other inventors.

Please provide any such information you have which is not already discussed in the enclosed patent application.

If you have any questions, do not hesitate to call.

Very truly yours,

Joseph M. Butscher

Joseph M. Butscher

JB
Enclosures

cc: William M. Wesley (w/o encls.)
       Kirk A. Vander Leest (w/o encls.)

McANDREWS, HELD & MALLOY, LTD.

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jbutscher@mhmlaw.com

September 23, 2003

VIA ELECTRONIC MAIL

Prakash Mathew

Your File No. 138065UL
Our File No. 15115US01

Re: New Utility Patent Application
        Title: Biometrically Enabled Imaging System

Dear Prakash:

We enclose the final draft patent application concerning the above-identified invention, which we have prepared on behalf of our client G.E. Medical Systems. Please review the application carefully for accuracy and completeness. Also enclosed are the Declaration and Power of Attorney, and the Assignment documents. If you are satisfied with the draft application, and have no other changes to the application, sign and date the Declaration and Power of Attorney, and sign, date and have notarized the Assignment. Please return the documents to me as soon as possible. For purposes of expediency, the documents may be returned via facsimile at 312-775-8100.

If you have any questions, do not hesitate to call.

Very truly yours,

Joseph M. Butscher

Joseph M. Butscher

JB
Enclosures

cc: William M. Wesley
        Kirk A. Vander Leest

EXHIBIT C

COMBINED DECLARATION AND POWER OF ATTORNEY
FOR PATENT APPLICATION

As a below-named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if several names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

BIOMETRICALLY ENABLED IMAGING SYSTEM

X the specification of which is attached hereto OR

☐ was filed on [date]as Application Serial No. [Serial No.] or PCT International
Application Number [Int'l App. No.] and was amended on [date] (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with 37 CFR §1.56.

I hereby claim foreign priority benefits under 35 U.S.C. §119 (a)-(d) or (f) or 365(b) of any foreign application(s) for patent or inventor's or plant breeder's rights certificate(s), or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below, and have also identified below, by checking the box, any foreign application for patent, inventor's or plant breeder's rights certificate(s), or any PCT international application having a filing date before that of the application on which priority is claimed:

COUNTRY	APPLICATION NUMBER	DATE OF FILING (day, month, year)	PRIORITY NOT CLAIMED	CERTIFIED COPY ATTACHED
				☐ Yes ☐ No
				☐ Yes ☐ No
				☐ Yes ☐ No

I hereby claim the benefit under 35 U.S.C. §120 of any United States application(s), or 365(c) of any PCT International application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of 35 U.S.C. §112, I acknowledge the duty to disclose material information as defined in 37 CFR §1.56 which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

U.S. PARENT APPLICATION OR PCT PARENT NUMBER	PARENT FILING DATE (day, month, year)	STATUS (patent and number, pending, abandoned)

EXHIBIT D

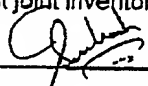I hereby claim the benefit under 35 U.S.C. §119(e) of any United States provisional application(s) listed below

APPLICATION NUMBER(S)	FILING DATE (day, month, year)

As a named inventor, I hereby appoint Practitioners at Customer Number 23446; Carl B. Horton (Reg. No. 34,622), Peter J. Vogel (Reg. No. 41,363), Michael A. Della Penna (Reg. No. 45,697), Ronald E. Myrick (Reg. No. 26,315), Henry J. Policinski (Reg. No. 28, 621) and Scott R. Hayden (Reg. No. 41,821) jointly, and each of them severally, my/our attorney(s) or agents(s), with full power of substitution, delegation and revocation, to prosecute this application, to make alterations and amendments therein, to receive the patent and to transact all business in the Patent and Trademark Office connected therewith.

I hereby direct that all correspondence and telephone calls in connection with this application be addressed to Practitioners at Customer Number 23446.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further, statements were made with the knowledge that willfully false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. §1001 and that all such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of sole or first joint inventor: Prakash Parayil Mathew

Inventor's signature: _____   Date: 10/03/03

Residence: S87 W28182 Lookout Lane
                Mukwonago, Wisconsin 53219

Citizenship: India

Post Office Address: same